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EVALUATION OF THE SOUTHERN PINE BEETLE INFESTATIONS ON THE TALLADEGA DIVISION, TALLADEGA NATIONAL FOREST, ALABAMA

by

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INTRODUCTION

An aerial sketch map survey and subsequent ground examinations were conducted on the Talladega Division of the Talladega National Forest during June 1974 (Figure 1). The survey, which covered the Shoal Creek and Talladega Ranger Districts (406,983 acres) was performed by the Forest Pest Management Group to determine the current status and trend of the southern pine beetle populations on this unit.

The southern pine beetle infestations on this Division are part of a southwide outbreak involving 10 states. The current outbreak was first observed on this Division of the Forest in the spring of 1972.

METHODS

A 50 percent aerial sketch map survey[1/] was performed in evaluating the southern pine beetle population.

A portion of the spots detected during the aerial phase of the evaluation were examined on the ground to confirm the cause of mortality, the percent of spots that were active, and to assess the general condition of beetle populations.

TECHNICAL INFORMATION

Insect - Southern pine beetle, *Dendroctonus frontalis*, Zimm.

Hosts - The southern pine beetle will attack all species of southern yellow pine. However, loblolly pine, *Pinus taeda* L., and shortleaf pine, *P. echinata* Mill., are the preferred hosts.

1/ Detection of Forest Pests in the Southeast, 1970, USDA, USFS, SA, S&PF, Div. of FPM, Pub. S&PF-7, Atlanta, Ga., 51 pp.

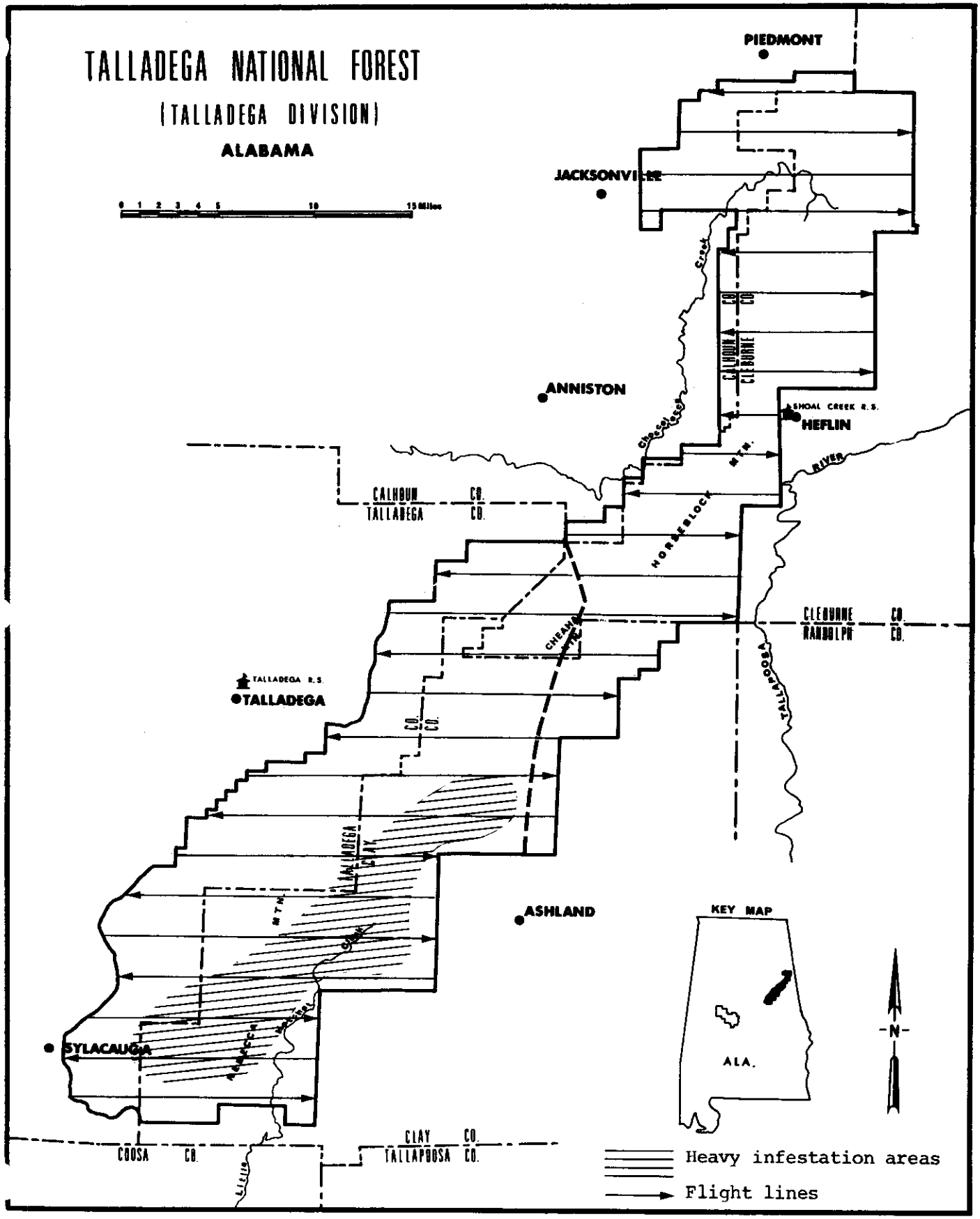

Figure 1. Map showing flight lines and areas of heaviest southern pine beetle infestation on the Talladega Division, Talladega National Forest, Alabama, 1974.

Type of Damage - Death of the tree is the result of cambial mining by the southern pine beetle as it constructs its gallery. The beetle also introduces the blue stain fungi, *Ceratocystis* spp., which slows down or blocks conduction of water in the stem.

Life cycle of the beetle - The beetles attack in pairs and construct a winding gallery in the cambium. Eggs are deposited in niches along the sides of the galleries. The eggs hatch into whitish grubs that further mine the cambium and then construct cells in the bark for pupation. The callow adults then mine through the bark to emerge. The complete life cycle takes about a month during the summer and as many as seven generations may be produced in a year.

Location of outbreak - Attacks were scattered throughout the Shoal Creek and the northern half of the Talladega Ranger Districts. The heaviest concentrations of attack were in the southern portion of the Talladega District (Figure 1).

RESULTS AND DISCUSSION

The southern pine beetle population is presently at a relatively low level (.6 infested trees/M acres) on the Shoal Creek Ranger District. This reflects a continued decrease in population levels from that reported in previous evaluations (Figure 2a).

Evaluations on the Talladega District show that southern pine beetle infestations are at moderate levels (approximately six infested trees per M acres host type). This reflects an increase from previous evaluation reports. Figure 2b shows the trend of southern pine beetle levels on the Talladega Ranger District for the last two years.

Tables 1 and 2 summarize the results of the evaluation for each of the Districts.

The following is a narrative discussion of ground observations on the Districts.

Talladega Division,
Talladega National Forest

Shoal Creek District - Twenty-seven percent of the spots examined during the ground check were infested with southern pine beetle. Brood densities of 184 insects per square foot of bark surface and a green infested to red infested tree ratio of 0.5:1 reflects a potential for increased beetle activity.

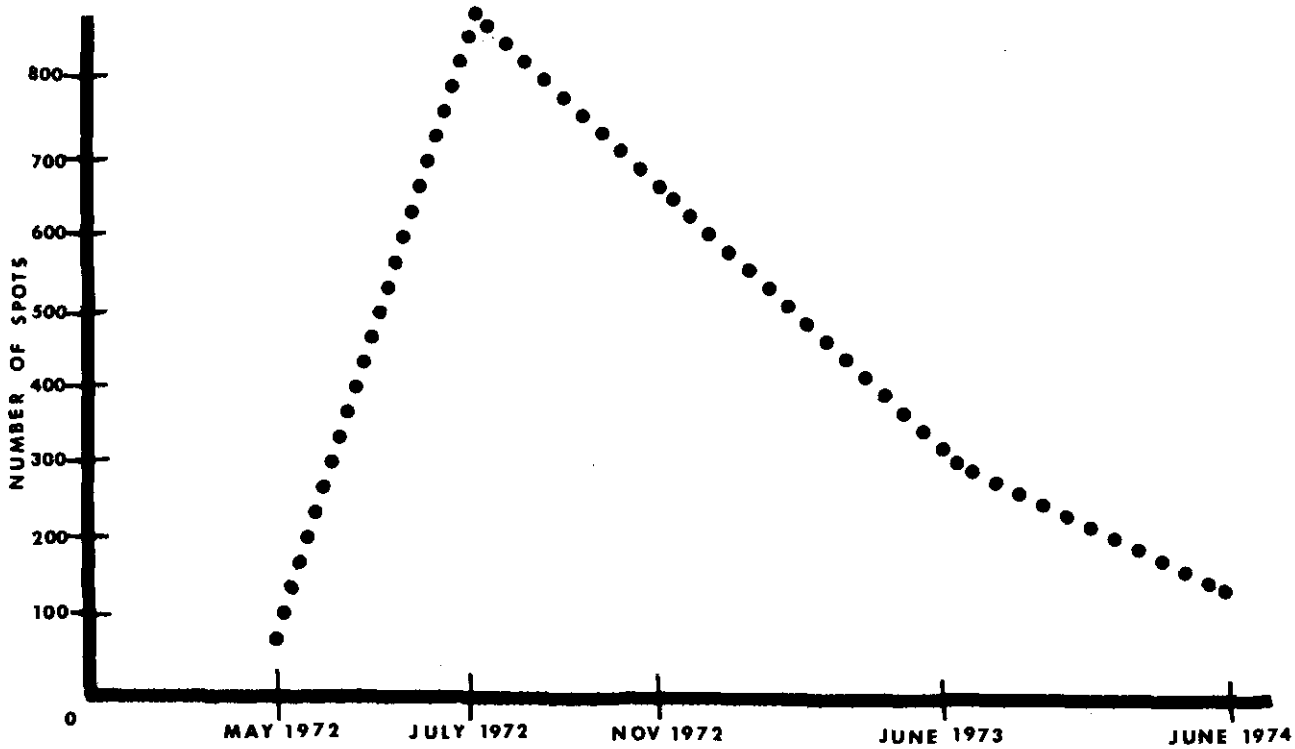

Figure 2a. Illustration of the trend of southern pine beetle infestation levels on the Shoal Creek Ranger District, Talladega National Forest, Alabama, 1974.

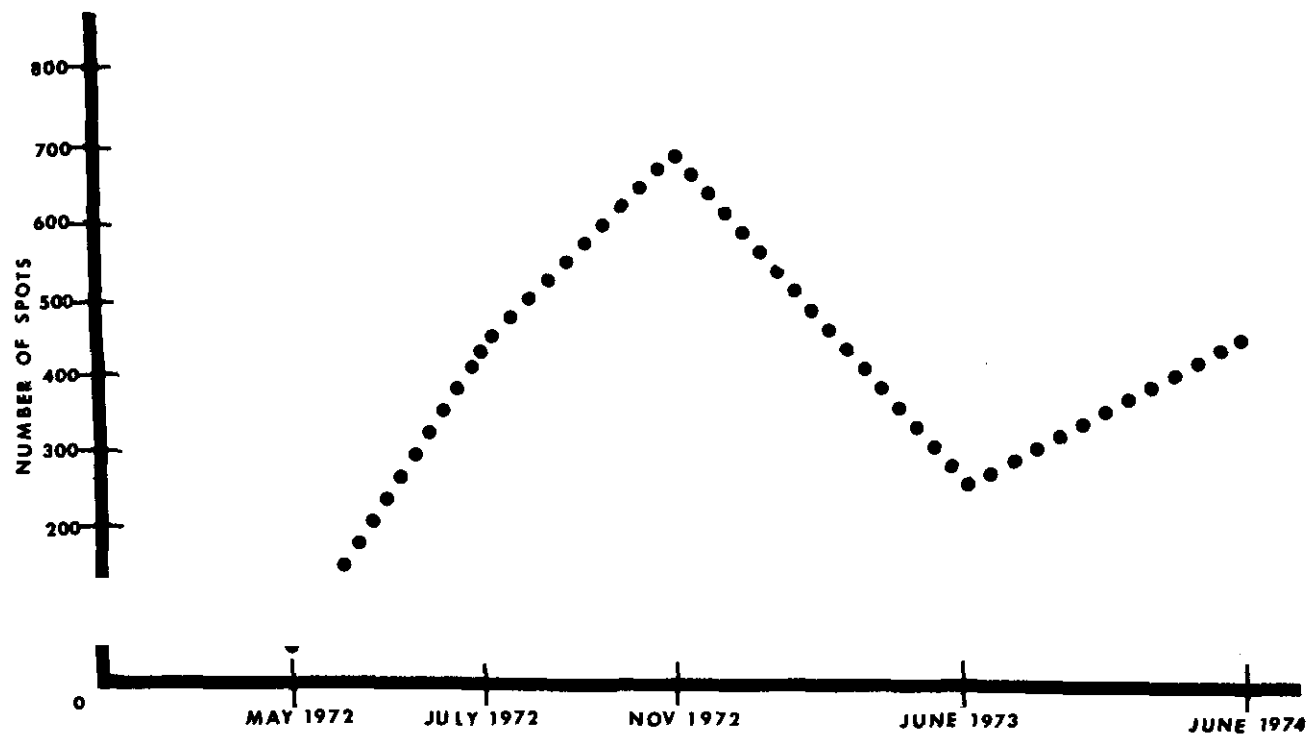

Figure 2b. Illustration of the trend of southern pine beetle infestation levels on the Talladega Ranger District, Talladega National Forest, Alabama, 1974.

Table 1. Results of southern pine beetle evaluation on the Talladega Division of the Talladega National Forest, Alabama, June 1974

	Shoal Creek R. D.	Talladega R. D.
Results compiled from data collected during the aerial phase of the evaluation		
Survey type	50 percent sketch map	50 percent sketch map
Date of aerial survey	June 1974	June 1974
Total acreage surveyed	195,000	210,000
Total susceptible host type	95,596	97,500
Total number of spots within survey boundary	116	439
Spots per M acres of host type	1.2	4.5
Average spot size (trees)	2.4	5.8
Range of spot size (trees)	1-10	1-40
Reds and faders per M acres host type	2.9	28
Results compiled from data collected during the ground and aerial phase of the evaluation		
Date of ground phase	June 1974	June 1974
Infested trees per M acres host type	0.6	5.90
Total number of infested trees within survey boundary	58	575
Total number of affected[1/] trees	575	3,097
Ratio of green infested to total red and fading infested trees	0.5:1	3:1
Brood density - insects/sq. ft. bark surface	184 SPB 7.1 predators	
Total volume of affected trees (MBF)	12.06	37.44
Total volume of affected trees (CCF)	2.4	28.91
Total volume of infested trees (MBF)	1.58	--
Total volume of infested trees (CCF)	0.2	10.35
Percent of spots infested	27.3%	18.2%

[1/] Affected means attacked and/or killed.

Table 2. Summary of aerial survey data - southern pine beetle evaluation, Talladega and Shoal Creek Ranger Districts, Talladega National Forest, Alabama, 1974[1/]

Ownership	Spot Size--Trees						Avg. Mult. Tree Spot Size[2/]
	Singles	2-5	6-20	21-50	51+	Total	
		Spots:Trees	Spots:Trees	Spots:Trees	Spots:Trees	Spots:Trees	
Shoal Creek Ranger District	73	35:122	8:80	0:0	0:0	116:275	4.70
Talladega Ranger District	153	142:516	122:1394	22:462	0:0	439:2525	8.29
Total All Districts	226	177:638	130:1474	22:462	0:0	555:2800	7.82

[1/] Corrected according to data by Aldrich et al. (1958); expanded to a 100 percent survey area coverage.

[2/] *Single tree spots not included.*

Talladega District - Eighteen percent of the spots examined in the ground survey were infested with southern pine beetle. There was a green infested to red infested tree ratio of 3:1. There are an estimated 3,097 affected trees on the District involving some 37.4 MBF of sawtimber and 28.9 CCF of pulpwood.

Infestation levels are expected to increase later in the summer.

RECOMMENDATIONS

It is recommended that the Talladega District continue to apply suppressive measures for southern pine beetle, especially in the southern portion of the District in accordance with the Southern Pine Beetle Control Plan for the National Forests in Alabama and FSM 5250. Project funds for Fiscal Year 1975 should be continued. A service trip will be conducted on the District during late summer 1974.

Population levels are low on the Shoal Creek District. A second evaluation will be made in late summer to determine if population levels have increased or if they remain low. If increases fail to materialize, we will recommend that project funds be terminated on the Shoal Creek District for second half of Fiscal Year 1975.

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